Claims

[c1] 1.An authentication system, comprising:
a first light source having a first light source spectral distribution and being capable of providing sufficient excitation to produce a photoluminescent emission from a medium comprising a luminescent tag and a color, wherein the photoluminescent emission has a photoluminescence intensity;
a second light source having a visible multi-wavelength spectral distribution and being capable of providing sufficient visible multi-wavelength illumination of the medium to generate a second analog response, wherein the second analog response is different from the photoluminescent emission; and
at least three optically filtered light sensing devices for detecting analog emission intensity in a spectral sensitivity range;
wherein each light sensing device has a different device spectral sensitivity range which includes at least a portion of the visible multi-wavelength spectral distribution;
wherein the device spectral sensitivity range of at least one of the light sensing devices includes at least a portion of a desired photoluminescent emission wavelength

range; and
wherein each light sensing device is configured to receive at least one of the photoluminescent emission and the second analog signal.

[c2] 2.The authentication system of Claim 1, further comprising a comparator in operable communication with the light sensing devices and capable of receiving a detected signature from the light sensing devices and of determining whether the detected signature is from an authentic medium.

[c3] 3.The authentication system of Claim 1, wherein at least one of the first light source and the second light source is a LED.

[c4] 4.The authentication system of Claim 3, wherein the first light source is a UV LED and the second light source is a visible LED.

[c5] 5.The authentication system of Claim 1, wherein the filtered light sensing devices are filtered photodiodes.

[c6] 6. The authentication system of Claim 5, wherein the device spectral sensitivity range of at least two of the filtered light sensing devices includes at least a portion of the desired photoluminescent emission wavelength range.

[c7] 7.The authentication system of Claim 6, wherein the device spectral sensitivity range of at least three of the filtered light sensing devices includes at least a portion of the desired photoluminescent emission wavelength range.

[c8] 8.The authentication system of Claim 5, wherein the first filtered photodiode is a green filtered photodiode, the second filtered photodiode is a blue filtered photodiode, and the third filtered photodiode is a red filtered photodiode.

[c9] 9.The authentication system of Claim 5, further comprising a fourth photodiode having a fourth spectral sensitivity range that is unfiltered in the visible multi-wavelength spectral distribution.

[c10] 10.The authentication system of Claim 5, further comprising
a fifth filtered photodiode having a fifth spectral sensitivity range that is different from the device spectral sensitivity ranges of the other filtered photodiodes;
wherein the first device spectral sensitivity range and the second device spectral sensitivity range are greater than or less than a desired peak emission wavelength;
the third device spectral sensitivity range includes the

desired peak emission wavelength; and
wherein if the first spectral sensitivity range is greater than the desired peak emission wavelength then the fifth spectral sensitivity range is less than the desired peak emission wavelength, and if the first spectral sensitivity range is less than the desired peak emission wavelength then the fifth spectral sensitivity range is greater than the desired peak emission wavelength.

[c11] 11.The authentication system of Claim 10, wherein the second light source includes a desired absorbed wavelength range, and wherein the fifth peak is in the desired absorbed wavelength range.

[c12] 12.The authentication system of Claim 5, wherein
the first photodiode has a first peak in a first wavelength range where the photoluminescent emission is at 10% to 70% of a maximum photoluminescence intensity;
the second photodiode has a second peak in a second wavelength range where the photoluminescent emission is at 10% to 70% of the maximum photoluminescence intensity; and
the third photodiode has a third peak in a third wavelength range where the photoluminescent emission is at 70% to 100% of the maximum photoluminescence intensity.

[c13] 13.The authentication system of Claim 5, further comprising at least one of
an eleventh photodiode having an eleventh spectral sensitivity range and having an eleventh peak that corresponds to a shortest wavelength of the desired photoluminescent emission wavelength range ±5 nm; and
a twelfth photodiode having a twelfth spectral sensitivity range and having a twelfth peak that corresponds to a longest wavelength of the desired photoluminescent emission wavelength range ±5 nm.

[c14] 14.The authentication system of Claim 5, wherein a thirteenth photodiode having an thirteenth spectral sensitivity range and having a thirteenth peak that is within 100 nm of a longest wavelength at which the desired photoluminescent emission wavelength range has an intensity of less than 1% of a maximum desired photoluminescence intensity.

[c15] 15.The authentication system of Claim 5, comprising a fourteenth optically filtered photodiode having a fourteenth spectral sensitivity range that includes the first light source spectral distribution.

[c16] 16.The authentication system of Claim 1, wherein the light sensing devices, the first light source, and the second light source are disposed adjacent one another such

that the photoluminescent emission and the second analog response can be received by the light sensing devices in a reflectance mode.

[c17] 17.The authentication system of Claim 1, further comprising a resistor in electrical communication with the light sensing devices.

[c18] 18.The authentication system of Claim 1, further comprising a calibration surface designed and located to enable the authentication system to internally calibrate.

[c19] 19.A data device, comprising:
an authentication analog measurement device capable of generating a detected analog signature of a data storage medium;
a comparator capable of determining if the detected analog signature is from an authentic medium, wherein the comparator is in operable communication with the measurement device; and
an information device capable of at least one of reading from and writing to the authentic medium, wherein the information device is in operable communication with the comparator.

[c20] 20.The data device of Claim 19, wherein the data storage medium is selected from the group consisting of a CD, a

DVD, a Blu-Ray disc, an EVD, read-only, recordable and rewritable versions thereof, and a combination comprising at least one of the foregoing data storage media.

[c21] 21.The data device of Claim 19, wherein the information device is capable of writing to the authentic medium.

[c22] 22.The data device of Claim 21, wherein the device is a digital content kiosk system comprising a data storage medium handling system.

[c23] 23.The data device of Claim 22, wherein the data storage medium handling system further comprises a receiver capable of receiving the data storage medium from an external source.

[c24] 24.The data device of Claim 19, wherein the measurement device is configured to measure a response to a property of energy selected from the group consisting of light, radio frequency, radioactive, magnetic, and electrical.

[c25] 25.The data device of Claim 19, wherein the measurement device further comprises
a first light source having a first light source spectral distribution and being capable of providing sufficient excitation to produce a photoluminescent emission from a medium comprising a luminescent tag and a color,

wherein the photoluminescent emission has a photoluminescence intensity;

a second light source having a visible multi-wavelength spectral distribution and being capable of providing sufficient visible multi-wavelength illumination of the medium to generate a second analog response, wherein the second analog response is different from the photoluminescent emission; and

at least three optically filtered light sensing devices for detecting analog emission intensity in a spectral sensitivity range;

wherein each light sensing device has a different device spectral sensitivity range which includes at least a portion of the visible multi-wavelength spectral distribution;

wherein the device spectral sensitivity range of at least one of the light sensing devices includes at least a portion of a desired photoluminescent emission wavelength range; and

wherein each light sensing device configured to receive at least one of the photoluminescent emission and the second analog signal.

[c26] 26.The data device of Claim 19, wherein the measurement device is capable of generating at least two different detected analog signatures from a read side of the data storage medium.

[c27] 27.A method of using a data device, comprising:
illuminating a tested medium with a first light source to produce a tested photoluminescent emission, wherein an authentic medium has an optical photoluminescence identifier with a desired photoluminescence intensity and a desired photoluminescence peak wavelength and has an optical color identifier, and wherein the tested photoluminescent emission has a tested photoluminescence intensity and a tested photoluminescence peak intensity;
illuminating the tested medium with a second light source in the visible wavelength range to produce a second analog response, wherein the second analog response is different from the tested photoluminescent emission;
determining a first intensity of the tested photoluminescent emission, wherein the first intensity is determined in a first wavelength range that includes the desired photoluminescence peak intensity;
determining a second intensity of the tested photoluminescent emission, wherein the second intensity is determined in a second wavelength range that is different than the first wavelength range;
determining a third intensity of the tested photoluminescent emission, wherein the third intensity is determined in a third wavelength range that is different than

the first and second wavelength range;
determining if the first intensity, the second intensity, and the third intensity of the tested photoluminescent emission correspond to the optical photoluminescence identifier; and
determining if the second analog response corresponds to the optical color identifier,
wherein if the first intensity, the second intensity, and the third intensity correspond to the optical photoluminescence identifier and if the second analog response corresponds to the optical color identifier, the tested medium is authenticated as the authentic medium.

[c28] 28.The method of Claim 27, further comprising determining if a digital identifier is present on the data storage medium.

[c29] 29.The method of Claim 27, further comprising writing data to the authentic medium.

[c30] 30.The method of Claim 27, further comprising inhibiting the writing to a non-authentic medium.

[c31] 31.The method of Claim 27, further comprising inhibiting reading from a non-authentic medium.

[c32] 32.The method of Claim 27, wherein the photoluminescent emission is a fluorescence emission.

[c33] 33.A method of using a data device, comprising:
generating a detected analog signature from a data storage medium;
comparing the detected analog signature to a desired signature from an authentic medium;
determining if the detected analog signature is from an authentic medium; and
controlling an information device based upon whether the detected analog signature is from the authentic medium, such that
if the detected analog signature is from the authentic medium, the information device at least one of reads from and writes to the authentic medium, and
if the detected analog signature is from an non-authentic medium, the information device is inhibited from reading from and writing to the non-authentic medium.

[c34] 34.The method of Claim 33, wherein determining if the detected analog signature is from an authentic medium further comprises comparing the detected analog signature in at least three distinct spectral ranges.